

IFW

IR-2131 (2-3873)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

New York, New York

Thomas RIBARICH

Date: November 12, 2004

Serial No.: 10/760,046

Group Art Unit: 2816

Filed: January 15, 2004

Examiner: N/A

For: DIMMING BALLAST CONTROL IC WITH FLASH SUPPRESSION CIRCUIT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUBMISSION

Sir:

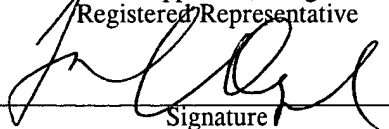
Submitted herewith is a copy of a search report issued by a patent searching authority other than the PTO and the cited art together with a form listing the same for the convenience of the Examiner.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450, on November 12, 2004

Respectfully submitted,

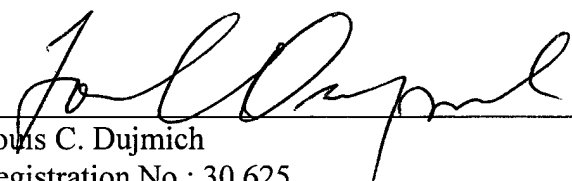
Louis C. Dujmich

Name of applicant, assignee or
Registered Representative

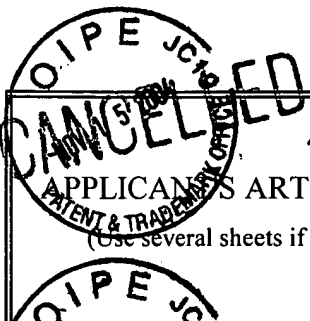


Signature

Date of Signature


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LCD:cfm
Enclosures

	Application 10/760,046	OFGS File No. IR-2131 (2-3867)
	Applicant Thomas RIBARICH	
	Filing Date January 15, 2004	Group Art Unit 2816

U.S. PATENT DOCUMENTS (not submitted for applications filed after 6/30/03)

Examiner Initial	Document Number	Date MM-YYYY	Name	Class	Sub-class	Filing Date If Appropriate
	US-6,008,593	12/99	Ribarich			
	US-3,890,537	6/75	Park et al.			
	US-6,011,360	1/00	Gradzki et al.			
	US-4,240,009	12/80	Paul			
	US-3,913,002	10/75	Steigerwald et al.			
	US-					
	US-					
	US-					
	US-					
	US-					

FOREIGN PATENT DOCUMENTS

	Document Number	Date MM-YYYY	Country	Class	Sub-class	Translation	
						Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Examiner	Date Considered
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 2131(2-3873)	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US04/01309	International filing date (<i>day/month/year</i>) 16 January 2004 (16.01.2004)	(Earliest) Priority Date (<i>day/month/year</i>) 16 January 2003 (16.01.2003)
Applicant INTERNATIONAL RECTIFIER CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (See Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1



as suggested by the applicant.



None of the figures



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/01309

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

A dimming electronic ballast control provides flash suppression by igniting the fluorescent lamp (100) at a high power level, and then reducing the power output level to the appropriate dimming set level. The electronic ballast includes an integrated circuit (60) that uses closed loop phase control and a VCO to control a switching frequency of a half bridge (Q1, Q2), which in turn controls power delivered to the fluorescent lamp. Current through the half bridge is sensed to provide closed loop control. the current sense signal is used to provide a high power level in the electronic ballast during ignition of the lamp, and as a phase detector for the phase control. A rate of change control circuit controls the speed of adjustment between power level settings, especially during ignition of the lamp. The electronic ballast provides a wide linear dimming range with fault detection and flash suppression.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/01309

A. CLASSIFICATION OF SUBJECT MATTER		
IPC(7)	: G05F 1/00	
US CL	: 315/209R, 224, 244, 291, 307, 308, DIG. 2, DIG. 4, DIG. 5, DIG. 7	
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) U.S. : 315/209R, 224, 244, 291, 307, 308, DIG. 2, DIG. 4, DIG. 5, DIG. 7		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched none		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Continuation Sheet		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,008,593 A (RIBARICH) 28 December 1999 (28.12.1999); See Fig. 2; col. 6, line 54 - col. 10, line 49.	1-9
A	US 3,890,537 A (PARK et al.) 17 June 1975 (17.06.1975); see Figs. 1-2; col. 3, lines 24-30; col. 4, lines 22-28 and 60-65; col. 5, lines 1-48.	1, 4, 7
A	US 6,011,360 A (GRADZKI et al.) 04 January 2000 (04.01.2000); see entire document.	1-9
A	US 4,240,09 A (PAUL) 16 December 1980 (16.12.1980); see entire document.	1-9
A	US 3,913,02 A (STEIGERWALD et al.) 14 October 1975 (14.10.1975); see entire document.	1-9
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents:		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"
"E"	earlier application or patent published on or after the international filing date	"X"
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"
"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search 27 June 2004 (27.06.2004)		Date of mailing of the international search report 03 NOV 2004
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer Thuy Vinh Tran Telephone No. (571) 272-1828

INTERNATIONAL SEARCH REPORT

PCT/US04/01309

Continuation of B. FIELDS SEARCHED Item 3:

EAST Text Search; terms: integrated circuit; current sensing or detecting or measuring or discerning; current reference; power set or setting; ignition.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
LOUIS C. DUJMICH
OSROLENK FABE GERB & SOFFEN, LLP
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 10036

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 03 NOV 2004	
Applicant's or agent's file reference 2131(2-3873)	
FOR FURTHER ACTION See paragraph 2 below	
International application No. PCT/US04/01309	International filing date (day/month/year) 16 January 2004 (16.01.2004)
Priority date (day/month/year) 16 January 2003 (16.01.2003)	
International Patent Classification (IPC) or both national classification and IPC IPC(7): G05F 1/00 and US Cl.: 315/209R, 224, 244, 291, 307, 308, DIG. 2, DIG. 4, DIG. 5, DIG. 7	
Applicant INTERNATIONAL RECTIFIER CORPORATION	

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Thuy Vinh Tran Telephone No. (571) 272-1828
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/01309

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/01309

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-9</u>	NO
Inventive step (IS)	Claims <u>1-9</u>	YES
	Claims <u>NONE</u>	NO
Industrial applicability (IA)	Claims <u>1-9</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Please See Continuation Sheet

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/01309

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

Claims 1-9 lack novelty under PCT Article 33(2) as being anticipated by Ribarich (U.S. Patent No. 6,008,593).

As to claim 1, Ribarich discloses, in Figs. 1, 3-5, and 6A-D, an integrated circuit for control of an electronic ballast comprising (1) a current sense circuit [RCS1, RCS2, RCS3] (see Fig. 6C) for obtaining current measurements of current supplied by the electronic ballast, (2) a current reference (provided via voltage and current reference circuit; see Fig. 3) for comparison (via comparators in CS1, CS2, CS3; see Fig. 6C; col. 5, line 61-36) with the current measurement obtained by the current sense circuit, (3) a first increased current reference established during an ignition phase of the electronic ballast to permit ignition at a higher current level than that determined by the current reference (see Figs. 4-5), and (4) a second increased reference for establishing a threshold below which the current measurement falls after ignition (see Figs. 4-5).

As to claim 2, Ribarich discloses, in Figs. 1, 3-5, and 6A-D, that the integrated circuit further comprises (1) an input control signal related to setting a power level for the electronic ballast (see PLAMP in fig. 1; col. 4, lines 25-27), and (2) an initial power level related to ignition in the electronic ballast and being greater than the control input power level setting, whereby the power level adjusts from the initial power level to the control input power level after ignition (see Fig. 1; col. 4, lines 19-35).

As to claim 3, Ribarich discloses, in Figs. 1, 3-5, and 6A-D, that the integrated circuit further comprises a rate of change circuit (REGULATION 34; see Fig. 3) for controlling the adjustment of the power level from the initial power level to the control input power level.

As to claims 4 and 7, Ribarich discloses, in Figs. 1, 3-5, and 6A-D, an electronic ballast and a corresponding method comprising (1) a current sense circuit [RCS1, RCS2, RCS3] (see Fig. 6C) for providing a current sense signal related to electronic ballast output current (corresponding to a step of measuring an output current of the electronic ballast), (2) a reference signal (provided via voltage and current reference circuit; see Fig. 3) for comparison (via comparators in CS1, CS2, CS3; see Fig. 6C; col. 5, line 61-36) with the current sense signal to provide an indication of electronic ballast output current above a specified threshold related to the reference signal (corresponding to a step of setting a threshold value for a power level of the electronic ballast related to ignition of the lamp), (3) a reference signal adjustment circuit (external resistors; see col. 4, line 12) to modify the reference signal value to thereby modify the threshold for the electronic ballast current output determined by the current sense signal (corresponding to a step of increasing the current level output of the electronic ballast to a value above the threshold level), and (4) the reference signal being modified during ignition to obtain a higher threshold value and a corresponding higher electronic ballast current output value so that ignition occurs at a higher power level (see Figs. 4-5) (corresponding to the steps of reducing the threshold level to a value less than the power output level of the electronic ballast after ignition of the lamp has occurred, and igniting the lamp and reducing the power output level of the electronic ballast below the reduced threshold).

As to claims 5 and 8, Ribarich discloses, in Figs. 1, 3-5, and 6A-D, that the electronic ballast further comprises (1) a control input signal for setting an output power level of the electronic ballast (see PLAMP in fig. 1; col. 4, lines 25-27) (corresponding to a step of reducing the power level output of the electronic ballast to a value related to a control input setting), and (2) an initial power level setting being greater than the control input power level setting (see Fig. 1; col. 4, lines 19-35).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US04/01309

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

As to claims 6 and 9, Ribarich discloses, in Figs. 1, 3-5, and 6A-D, that the electronic ballast further comprises a rate of change control circuit (REGULATION 34; see Fig. 3) for adjusting the electronic ballast power level from the initial power level to the control input power level according to a specified rate of change (corresponding to a step of controlling the rate of change of the adjustments of the power level of the electronic ballast as the power level adjusts from the ignition power level to the power level associated with the control input setting).

Claims 1-9 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended ?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.